

Contact: Shelley Dawicki
508-495-2378

Shelley.Dawicki@noaa.gov

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Scientists Tag 30 Loggerhead Turtles, Deploy Teacher-Built Surface Drifters

Loggerhead sea turtles tagged earlier this summer, and sea surface current drifters built by New England teachers, are providing students and teachers with plenty of science and technology lessons, and some practical insight into field research.

Heather Haas, Henry Milliken, Lisa Conger and Eric Matzen from the Northeast Fisheries Science Center (NEFSC)'s Woods Hole Laboratory were part of a research team from the Northeast Sea Turtle Collaborative that tagged 30 loggerhead turtles in mid-Atlantic waters during a cruise May 30-June 4. Funding through the sea scallop industry's research set-aside program awarded to another Collaborative partner, the Coonamessett Farm Foundation (CFF), provided an opportunity for several research organizations to work together on the project.

Twenty-nine of the turtles were tagged in the first three days of the cruise, a record for the team. The drifters, which track ocean surface currents, were deployed during the same cruise as part of a study to see if the turtles followed specific currents or wind-driven sources of food.

The satellite-linked data loggers, or tags, provide detailed information about turtle behavior at sea in general, but also within commercial fishing areas, where juvenile loggerheads have been the most commonly caught sea turtles. The data loggers gather information on turtle behavior and where they go, which in turn can be used to define when they are most at risk of encountering fishing gear. Loggerheads, like all sea turtles found in U.S. waters, are protected by the Endangered Species Act.

The surface drifters were built by NOAA Teacher at Sea (TAS) alumni from the northeast region during a weekend workshop in mid-May at the Woods Hole Science Aquarium, part of the NEFSC's Woods Hole Laboratory. Teachers learned about at-sea turtle tagging and research from biologist Heather Haas, who collaborated with oceanographer Jim Manning to build four sea surface drifters with the teachers. The turtle researchers later deployed those drifters at sea during the tagging cruise, naming one of the turtles TAS, the Teacher at Sea turtle, in honor of the teachers who built the drifters.

Haas and Manning both work at the NEFSC's Woods Hole Laboratory but had not worked on a research project together until the Teacher at Sea (TAS) alumni workshop presented an opportunity for them to collaborate. Students and teachers can follow TAS the

Turtle (#886) and track the surface drifters online at Northeast Sea Turtle Collaboration 2012 Turtle Tagging and Drifter Deployment. They can also track the turtles at seaturtle.org.

The research team worked from two New-Jersey based commercial sea scallop vessels, the 91-foot F/V *Kathy Ann* and the 85-foot F/V *Ms Manya*. The turtles were live captured using a large dip net and brought to the F/V *Kathy Ann* for assessment and tagging. Each turtle was fitted with a satellite tag as well as more conventional flipper and PIT (for passive integrated transponder) tags, and then released back into the ocean. Most of the turtles were out of the water for an hour or less. The various tags will enable researchers to track the animals in the months ahead to document their behavior at sea.

Blood samples for a number of studies were collected from all the turtles, which were also weighed and measured while on the deck of the *Kathy Ann*. The largest weighed 333 pounds. Two adult males and one adult female loggerhead were tagged, a first time the team has tagged known adult turtles. Unlike many other species, the sex of a turtle hatchling is determined by the temperature within the nest and cannot be determined from genetic samples. While determining whether a turtle is a juvenile or adult based on their size is a gray area, this year some of the turtles tagged were large enough to be out of that "gray zone" and into the size typically considered adults.

Blood and other biological samples collected on the cruise will be analyzed by Sea Rogers Williams of the National Marine Life Center.

Half of the satellite tags were provided by the NEFSC and half by the Coonamessett Farm Foundation (CFF), which has partnered with Haas and her NEFSC colleagues for a variety of turtle research studies. The team tagged 25 loggerhead turtles in a similar project in 2011, 15 in 2010, and two in 2009. In all, 72 loggerhead turtles have been tagged with satellite data loggers.

"The project is truly a collaborative effort between NOAA, the fishing industry via scallop research set-asides and chartered vessels and crews, and other non-governmental organizations," Haas said.

Ron Smolowitz, a principal Investigator with CFF, said the research set-aside funding "allows industry and researchers to work together on understanding loggerhead turtle behavior and how the turtles interact with fisheries." Smolowitz, and co-workers Kathryn Goetting, who participated in this cruise, and Brianna Valenti are working with tagging data and data collected using a CFF remotely operated vehicle that follows selected turtles.

The research team is part of the Northeast Sea Turtle Collaborative. Partners include NOAA's Northeast and Southeast Fisheries Science Centers, Coonamessett Farm Foundation in East Falmouth, Mass., the Virginia Aquarium & Marine Science Center, the National Marine Life Center in Buzzards Bay, Mass., and The Riverhead Foundation for Marine Research and Preservation on Long Island, N.Y.

"Luck seemed to be on our side, both in terms of good weather and in spotting so many turtles right away at just three locations off the Mid-Atlantic coast," Haas said of the 2012 tagging effort. "We were back ashore in less than a week after a very successful effort."

Data collected for the tagging project is being provided to the Atlantic Marine Assessment Program for Protected Species (AMAPPS), a survey of protected marine species along the East Coast covering waters from the coast out to 200 miles offshore.

The 2012 turtle tagging cruise was supported by the Bureau of Ocean Energy Management (BOEM) and the sea scallop industry, with catch set aside from their quota and used to fund research.

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Related links:

Northeast Sea Turtle Collaboration 2012 Turtle Tagging and Drifter Deployment:

<http://www.nefsc.noaa.gov/psb/turtles/turtleTracks.html>

Remotely Operated Vehicles and Satellite Tags Aid Turtle Studies (SS0915):

http://www.nefsc.noaa.gov/press_release/2009/SciSpot/SS0915/

Scientists Tag 25 Loggerhead Turtles: <http://www.nefsc.noaa.gov/news/features/turtles/>

Loggerhead Turtles: <http://www.nmfs.noaa.gov/pr/species/turtles/loggerhead.htm>

NEFSC's Protected Species Branch (Turtle Research):

<http://www.nefsc.noaa.gov/read/protsp/mainpage/turtles>

AMAPPS: <http://www.nefsc.noaa.gov/psb/AMAPPS/index.html>